DOCUMENT RESUME

ED 088 833 SP 007 804

AUTHOR Peng, Samuel S.
TITLE Teacher Class-Expectations, Instructional Behaviors, and Pupil Achievement.
PUB DATE Apr 74
NOTE 23p.; Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, Illinois, April 15-19, 1974

EDRS PRICE MF-$0.75 HC-$1.50
DESCRIPTORS *Academic Achievement; *Student Motivation; Student Teacher Relationship; *Teacher Attitudes; *Teacher Behavior; Teacher Influence

ABSTRACT

This study investigated the relationship among teacher expectations for the class, instructional behaviors, and class achievement. Involved in the study were 30 teachers from randomly selected elementary schools. Their expectations were measured by three scales: nature of the class, expectations of self, and comparative expectations. Their behaviors were related in terms of provision of learning opportunities, clarity of instruction, and enthusiasm in teaching. Multivariate analysis provided little evidence for the relationships; thus, it was concluded that favorable teacher expectations and behaviors are probably necessary but are not sufficient factors for high achievement of the class. (Author)

Division C Section C-2
Section No. 19-10

TEACHER CLASS-EXPECTATIONS, INSTRUCTIONAL BEHAVIORS, AND PUPIL ACHIEVEMENT

Samuel S. Peng

University of North Carolina at Chapel Hill

Paper Presented at the AERA Annual Meeting.

April, 1974

TEACHER CLASS-EXPECTATIONS, INSTRUCTIONAL BEHAVIORS, AND PUPIL ACHIEVEMENT

Teachers' expectations for individual students have received wide attention from educational researchers. After the publication of Pygmalion in the Classroom (Rosenthal & Jacobson, 1968), there was a flurry of research activity relating to teacher expectations (see Finn, 1972; Elashoff & Snow, 1971). The assumption generally adopted is that differential teacher expectations result in differential teacher behaviors, which ultimately lead pupils to differential achievement levels. This assumption, however, has not been consistently supported. Many studies failed to demonstrate the effects of teacher expectations on pupils' cognitive aptitude growth. Among them are Claiborn (1969), José and Cody (1971), Evans and Rosenthal (1969), Conn, Edwards, Rosenthal and Crowne (1968), Fleming and Anttonen (1971a, 1971b), Anderson and Rosenthal (1968), Flowers (1966), and Kester (1971). Many others did find positive and significant relationship of teacher expectations with pupil achievement. For example, Maxwell (1971) and Carter (1971) found that experimental subjects gained significantly more than the control subjects in measure of I.Q.. Schrank (1968) found that group achievement means fell into position in the same order as the five ability labels. Palardy (1969), Rist (1970), Doyle, Hancock and Kifer (1971), Borphy and Good (1970), and Seaver (1971) also found that naturalistically formed teacher' expectations are related to student performance.

The inconsistency of findings may be accounted for by such factors as the success of the expectation induction (see Brophy & Good, 1972), the strength of induced expectations, the duration of the experiment, pupil individual differences and outcome measures

(see Peng, 1972). It is generally conceded that naturalistically formed teacher expectations sometimes do function as self-fulfilling prophecies in the classroom (see Finn, 1972; Borphy & Good, 1972).

Most, if not all, prior research has viewed teacher expectations as specific evaluative anticipations for a single individual pupil. Only a few studies investigated the effects of teacher expectations for the class as a whole. Teacher class expectations as pointed out by Finn (1972), are "likely to reflect the teacher's knowledge of the level of preparation of the students, the amount of time he will have available to work with the students, both on a daily basis and for the school year, the quantity and quality of instructional materials available, and some knowledge of his own instructional abilities, as widened perhaps by past experience". (p. 396). Unlike specific expectations being a function of pupils' personal characteristics such as personality, sex, race, and socio-economic backgrounds, teachers' class-expectations are likely reflected in the teachers' behaviors toward the class, teaching procedures and curriculum organization, and ultimately the general achievement level of the class. As specific expectations lead individuals to different achievement levels, teachers' class-expectations may determine the class' performance.

Teacher class-expectations, however, have not been carefully examined. In an attempt to seek information about equal educational opportunity for all children, a study of teachers' class-expectations and instructional behaviors should certainly be informative. For example, if the two variables are related to class performance, teacher selection and teacher education programs should incorporate research findings into their criteria.

It is, therefore, the primary purpose of this study to investigate the interrelationship of teachers' class-expectations and some instructional behaviors, and pupils' achievement. More specifically, this study was designed to seek answers for the following questions: (1) Are teacher class-expectations antecedents of instructional behaviors? (2) How are teachers' class-expectations and instructional behaviors related to class achievement? (3) Do favorable instructional behaviors override the effects of negative teacher class-expectations?

Subjects:

Subjects involved in this study were thirty teachers (11 males and 19 females), and their pupils from 11 randomly selected schools. The teachers were heterogeneous in classroom experience, ranging from several weeks to 27 years of teaching experience. The pupils included 229 fourth graders (110 males, 119 females), 301 fifth graders (159 males, 144 females), and 310 sixth graders (146 males, 164 females). No particular handicaps in cognitive learning were recorded. Their I.Q. ranged from 75 to 150, with a mean of 105.35 and a standard deviation of 13.64. Ninety-five per cent of them were from intact families, and only about one fourth of them were from families in which the father held semi- or unskilled occupations.

Measurement:

Teacher expectations for the class were partitioned into three specific parts: (1) Nature of the Class -- the general evaluation of the class in their ability, motivation and preparation; (2) Expectations for Self -- expections for the class in reference to the teacher's own conditions such as teaching

skills, time and resources available; and (3) Comparative Expectations -- expectations for the class in comparison with other classes, with their ability potentials, and with the teacher's aspirations. The scales for measuring these expectations were constructed out of a 13-item questionnaire. Their KR-20's are .66, .70, and .60 respectively.

The following items from the questionnaire, in the same order, represent the scales of the Nature of the Class, Expectations for Self, and Comparative Expectations.

To what extent do you feel the abilities of your pupils to learn match those of pupils in the same grade, in general?

A. In general, my pupils probably have high ability, compared to others.

B. In general, my pupils probably have above average ability, compared to others.

C. In general, my pupils probably have below average ability, compared to others.

D. In general, my pupils probably have low ability, compared to others.

Assume for a moment that you could have all the time and materials you would like in working with this year's group. What per cent of the pupils in this class do you feel you could bring to their highest possible achievement levels?

A. 90 - 100%

B. 50 - 89%

C. 10 - 49%

D. Less than 10%

Compared to other classes at the same grade level, how well do you think your class will learn the year's subject matter?

A. My class will probably be one of the best.

B. My class will probably be good, but not exceptional.

C. My class will probably be fair.

D. My class will probably be poor.

Instructional behaviors included: (1) provision of learning opportunities -- the extent and degree of assistance, and amount of time, space and materials provided for the class; the willingness exhibited in helping pupils; (2) clarity of instruction -- the clarity in explaining concepts, answering questions, giving assignments, and organizing the learning materials; and (3) enthusiasm -- the excitement and pupil involvement the teacher induced in the class and vigor in presentation. The selection of these three aspects of teacher behavior was done in reference to the review of research findings of teaching effectiveness by Rosenshine and Furst (1971). These three behaviors are the most important ones among those found to be related to pupil learning.

These behaviors were measured by scales constructed out of 27 item questionnaires. Their KR-20's are .64, .69 and .69, respectively.

To illustrate the nature of the scales, the following items are included to represent the items included in the scales.

I can always use the books when I need them.

A. Yes

B. No

My teacher always explains things clearly.

A. Yes

B. No

There is always something interesting happening in my class.

A. Yes

B. No

The ratings of teachers' instructional behavior were through the perceptions of the pupils (in reference to Murray, 1938; Stein, 1962). Such ratings were likely to be influenced by the pupil's personality or personal biases about the teacher. However, since teachers or classes were the units of analysis, the mean of the class was used as the index of teacher behavior. The degree of reliability by the mean indices is higher than that of any one pupil's ratings.

Pupil ratings of teachers have drawn criticism. Costin, Greenough and Menges (1971) reviewed many studies relating to the pupil evaluation of teachers. Their general conclusion was that "students' ratings can provide reliable and valid information on the quality of courses and instruction" (p. 530). In particular, Rayder's (1969) research suggested that the student's sex, age, and grade-point-average, and the grade received from the teacher have little relationship to student ratings of the teacher. Davidoff (1970) also provided strong evidence leading to the conclusion that student opinion of teacher behavior is very stable over time.

Nevertheless, the concern of whether or not higher achievers tended to rate teachers more favorably than their classmates was further investigated before the onset of major hypothesis testings. The pooled within class correlations

between pupil achievement and ratings given to the teacher for a random sample of size 106 (across grades) were not significant at .05 level (multiple R's are .15, .19, and .14 for opportunity, clarity, and enthusiasm respectively). This was further cross validated by another random sample of size 78. The results support the postulate that no relationship exists between pupil achievement and ratings given to the teacher.

The effect of teacher personality on the pupils' ratings, however, was not tested because of the lack of information. It is possible that friendly teachers may get better ratings. In interpreting the hypothesis results, this concern should be heeded.

Criterion Measures: Pupils' achievement scores were used to examine the effects of teachers' expectations and instructional behaviors. It is argued that achievement on subject learning is more directly related to teacher behavior than mental growth. In particular, science and mathematics learnings are found to be related to teacher quality (Davé, 1963). Previous research also showed that teacher expectations were more likely to be reflected in pupil achievement than in aptitude growth (see Baker & Crist, 1971).

Canadian Tests of Basic Skills, appropriate for grades 4, 5, and 6, were used to measure the pupils' cognitive achievement. This test battery is similar to the Iowa Every Pupil Tests of Basic Skills, except that it was standardized on a representative sample of Canadian schools. The vocabulary, reading comprehension, mathematics concepts, and mathematics problem solving subtests were used in this study. Vocabulary tests pupils' understanding of word meaning; reading comprehension, the understanding of what one reads; and mathematics, the understanding of the number system,

mathematics terms and operations and problem solving.

Procedures:

Three weeks after school began, the teachers were asked to fill out the Teacher Expectations Questionnaire. Each item response was then standardized, and appropriate items were summed over to get scale scores. At the end of the school year, pupils were administered the achievement tests, and asked to rate their own teachers using a 17-item questionnaire. The questionnaire item class means were used as measures of the teacher's behavior ratings. These measures were further standardized across the teachers before appropriate items were summed over to get scale scores. The deviations of the observed achievement grade equivalents from the expected grade equivalents were the criterion measures. The conversion was necessary to combine pupils of three grades into one sample. The problem of extrapolation beyond the range of grades 3 and 8 was recognized. Fortunately only about 5% of achievement scores on four subtests were beyond that range, and mostly below 3.00. The class mean was then the unit of analysis, as prescribed by Glass (1968), and Raths (1967).

Analysis and Results:

Hypothesis 1 asserts that teachers' class-expectations are positively related to teachers' instructional behaviors. To test this hypothesis, teachers' expectation measures were correlated to their behavior ratings. Simple correlations and multiple correlations are presented in Table 1. In general, the correlations were negligible. Enthusiasm tended to correlate higher with teacher expectations than other two behavior ratings, but the

correlations were not significant. Little evidence was obtained to support the hypothesis. Teachers' class expectations were not related to their behaviors toward the class.

Insert Table 1 about here

Hypothesis 2 asserts that the higher the teachers' class-expectations, the higher is the class achievement. To test this hypothesis, teacher's expectation measures were correlated to class achievement means. The correlations are presented in Table 2. None of the correlations was significant at .05 level. However, the correlations were in general positive, and expectations tended to correlate higher with mathematics achievement than with reading achievement. The latter trend is particularly significant since it supports a general finding that the teacher, or the school, has higher influence on mathematics learning than on reading (Davé, 1963).

Insert Table 2 about here

The possibility that the nonsignificance of these correlations might be due to the narrow range of expectations for classes was examined. The range (difference between the high and the low) was 2.6, 2.8, and 2.3 standard score for nature of the class, expectations for self, and comparative expectations, respectively. It should also be noted that the raw item means were mostly (about two thirds) above 2.0 in a 4-point (low to high) scale. Therefore the lack of variation in teacher expectations was probably a restriction of this study.

Hypothesis 3 asserts that the more favorable the teacher behaviors, the higher is the achievement of the class. To test this hypothesis, teachers' behavior ratings were correlated with class achievement means. The results are presented in Table 3. Although the correlations were in general positive, none of them was significant. No evidence was obtained to support the hypothesis.

Insert Table 3 about here

Hypothesis 4 asserts that the more favorable the instructional behavior, the less influence do the teachers' expectations exert on class achievement. To test this hypothesis, teachers were first classified into a high or a low behavior group on the grounds that a high group had two of the three ratings being greater than the scale means. The teacher's expectation measures were then correlated to class achievement means within each behavior group. The results are presented in Table 4. None of the multiple R's was significantly different from 0. Teacher expectations were not more effective in the low behavior group than in the high group. In fact, the opposite trend seemed to exist although statistical comparisons were not meaningful.

Insert Table 4 about here

Summary:

Thirty teachers and their classes were involved in a study to examine the interrelationships among the three variables of teachers' class-expectations and instructional behaviors, and pupils' achievement. Multiple regression analysis provided the following results:

1. Teacher expectations were not significantly associated with instructional behaviors. Among the three behaviors, enthusiasm had the highest correlations with teacher expectations.

2. Relationships of teacher expectations with class achievement were not significant although they were generally positive.

3. Instructional behaviors were in general not significantly related to pupil achievement.

4. There was a tendency for teacher expectations and instructional behavior to correlate higher with mathematics problem solving than with verbal achievement.

5. Competent teachers in terms of favorable instructional behaviors did not reduce the effects of teacher expectations; they were more likely to consolidate their biases about their pupils.

Discussion:

The finding of the overall weak relationship of teachers' expectations to pupil achievement, in a sense, does not deviate from the main stream of educational research findings that curriculum selections and teaching methods are not consistently and significantly related to pupil achievement (Wallen & Travers, 1963), since teachers' expectations for the class are assumed to be reflected in these curricular variables. This is unfortunate in the attempt to seek clues for improving school education. However, this finding further shows that pupil learning is such a complex phenomenon that no single teacher variable such as expectation may noticeably determine the degree of pupil cognitive learning. To improve school education one probably has to work with total environmental components of the school, the home,

the peer and the community.

One theoretical aspect of teacher expectations, however, should be noted; that is, specific teacher expectations for each single pupil in the classroom are probably more critical to pupil achievement than general expectations for the class. The latter expectations are primarily reflected in teaching procedures and curriculum selection while the former expectations are reflected in more specific teacher-pupil interactions such as giving more praise words, learning opportunities and warm reactions. These reinforcing or punishing treatments may reflect or increase pupil differences in achievement. Thus, non-significant relationship of teacher expectations for the class with the class performance does not necessarily repute the existence of self-fulfilling prophecy in the classroom operated by the specific expectations for single pupil as shown by other studies.

The instructional behaviors which make teachers different in the classroom are basically unknown. This study provided little evidence of the relationship of clarity of instruction, learning opportunities and enthusiasm to pupil achievement. This is a further support for Davidoff's (1970) finding that no consistent relationship exists between pupil ratings of teachers' behavior and achievement gain. Such a finding is unfortunate in the search for clues for better classroom instruction.

The problem of studying teacher effects is accentuated by the difficulty of characterizing teacher behaviors. In this study, although the measurements were logically and psychometrically constructed to measure specific aspects of instructional behaviors, the reliability is still not high. Further attempt to increase the reliability and the validity of the scales may benefit in

the understanding of effects of instructional behaviors.

The validity of pupil ratings of the teacher is another concern. Although, in general, pupil ratings have proven to be valid, many of the studies involved high school or college students (see Costin, Greenough & Menges, 1971). Teacher ratings by young school children are likely to be affected by teachers' personal characteristics. Young children are probably not capable of differentiating teachers in terms of competency variables. In future studies, observational techniques can be employed in an attempt to increase the validity of teacher ratings.

Favorable instructional behaviors did not prove to override the effects of negative teacher expectations. Instead, they seemed to promote or strengthen the effects. This finding, however, does not imply that negative expectation effects can be eliminated or lessened by employing less competent teachers. This finding probably indicates that what makes self-sulfilling prophecies operate in the classroom is the differential treatments given to the pupils. The more competent the teacher, the more easily can he provide differential treatments to pupils. It is suggested that teachers must not let their behaviors toward pupils be determined simply by their attitudes. They must try to give at least equal amount of time, encouragement and assistance to those "slower" learners as they give to those so-called "bright" pupils. If the teacher has positive expectations, and constantly self-analyzes and improves his reactions toward the pupils, the negative aspects of teacher expectations -- providing less favorable opportunities to the low-expectations pupils -- can be lessened if not eliminated.

References

Anderson, D. F., & Rosenthal, R. Some effects of interpersonal expectancy and social interaction on institutionalized retarded children. Proceedings of the 76th Annual Convention of the American Psychological Association, 1968, 3, 479-480.

Aronson, A., & Carlsmith, J. M. Performance expectancy as a determinant of actual performance. Journal of Abnormal and Social Psychology, 1962, 65, 178-182.

Asbury, D. F. The effects of teacher expectancy, subject expectancy, and subject sex on the learning performance of elementary school children. Dissertation Abstracts International, 1971, 31(9A), 4537.

Baker, J. P., & Crist, J. L. Teacher expectancies: A review of the literature. In J. D. Elashoff & P. E. Snow (Eds.), Pygmalion Reconsidered, Worthing, Ohio: Charles A. Jones Publishing Co., 1971, 48-64.

Broome, B. J. An investigation of the effects of teachers' expectations on the achievement in reading of first-grade boys. Dissertation Abstracts International, 1971, 31(9A), 4538-4539.

Brophy, J. E., & Good, T. L. Teachers' communication of differential expectations for children's classroom performance: Some behavioral data. Journal of Educational Psychology, 1970, 61, 365-374.

Brophy, J. E., & Good, T. L. Teacher expectations: Beyond the Pygmalion controversy. Phi Delta Kappan, 1972, 54(4), 276-278.

Carter, D. L. The effect of teacher expectations on the self-esteem and academic performance of seventh grade students. Dissertation Abstracts International, 1971, 31(9A), 4539.

Claiborn, W. L. Expectancy effects in the classroom: A failure to replicate. Journal of Educational Psychology, 1969, 60, 377-383.

Conn, L. K., Edwards, C. E., Rosenthal, R., & Crowne, D. Perception of emotion and response to teachers expectancy by elementary school children. Psychological Reports, 1968, 22, 27-34.

Costin, F., Greenough, W. T., & Menges, R. J. Student ratings of college teaching: reliability, validity, and usefulness. Review of Educational Research, 1971, 41(5), 511-535.

Davé, R. H. The identification and measurement of environmental process variables that are related to educational achievement. Unpublished Ph.D. dissertation, University of Chicago, 1963.

Davidoff, S. H. The development of an instrument designed to secure student assessment of teaching behaviors that correlate with objective measures of student achievement. The School District of Philadelphia, Office of Research and Evaluation, March 1970.

Doyle, W., Hancock, G., & Kifer, E. Teachers' perceptions: Do they make a difference? Paper presented at the annual meeting of the American Educational Research Association, 1971.

Elashoff, J. D., & Snow, R. E. Pygmalion reconsidered. Worthington, Ohio: Charles A. Jones Publishing Co., 1971.

Evans, J. T., & Rosenthal, R. Interpersonal self-fulfilling prophecies: Further extrapolation from the laboratory to the classroom. Proceedings of the 77th Annual Convention of American Psychological Association, 1969, 4(1), 371-372.

Finn, J. D. Expectations and the educational environment. Review of Educational Research, 1972, 42(3), 387-410.

Fleming, E. S., & Anttonen, R. G. Teacher expectancy or my fair lady. American Educational Research Journal, 1971, 8, 241-252,a.

Fleming, E. S., & Anttonen, R. G. Do teachers get what they expect? The self-fulfilling prophecy revisited. Childhood Education, 1971, 47, 451-452, b.

Flowers, C. E. Effects of an arbitrary accelerated group placement on the tested academic achievement of educationally disadvantaged students. Dissertation Abstracts, 1966, 27A, 911.

Glass, G. V. The experimental unit and the unit of statistical analysis: Comparative experiments with intact groups. Paper presented at the American Educational Research Association Training Presession on Research in Reading Instruction, Los Angeles, February 3, 1968.

Goldsmith, J. S., & Fry, E. The test of a high expectancy prediction on reading achievement and I.Q. of student in grade 10. Submitted to American Educational Research Journal, 1970.

Good, T. L. Which pupils do teachers call on? The Elementary School Journal, 1970, 70, 190-198.

Good, T. L., & Brophy, J. E. Looking in classrooms. New York: Harper & Row, Publishers, 1973.

José, J., & Cody, J. J. Teacher-pupil interaction as it relates to attempted changes in teacher expectancy of academic ability and achievement. American Educational Research Journal, 1971, 8, 39-50.

Kester, S. The communication of teacher expectations and their effects on the achievement and attitude of secondary school students. Submitted to American Educational Research Journal, 1971.

Maxwell, M. L. A study of the effects of teacher expectation on the I.Q. and academic performance of children. Dissertation Abstracts International, 1971, 31(7A), 3345.

Medinnus, G., & Unruh, R. Teacher expectation and verbal communication. Paper presented at the annual meeting of the Western Psychological Association, 1970.

Palardy, J. M. What teachers believe -- what children achieve. Elementary School Journal, 1969, 69, 370-374.

Peng, S. S. Expectations, Opportunities and Student Performance. Research qualifying paper for Ph.D. candidacy, State University of New York at Buffalo, 1972.

Raths, J. The appropriate experimental unit. Educational Leadership, 1967, 25, 263-266.

Rayder, N. F. College student ratings of instructions. East Lansing, Michigan: Michigan State University, Office of Educational Services, 1968.

Rist, R. C. Student social class and teacher expectations: The self-fulfilling prophecy in ghetto education. Harvard Educational Review, 1970, 40, 411-451.

Rosenshine, B., & Furst, N. Research on teacher performance criteria. In B. O. Smith (Ed.) Research in teacher education: A symposium. Englewood Cliffs, New Jersey: Prentice-Hall, 1971, 37-72.

Rosenthal, R., & Jacobson, L. Teacher's expectancies: Determinants of pupils' I.Q. gains. Psychological Reports, 1966, 19, 115-118.

Rosenthal, R., & Jacobson, L. Pygmalion in the classroom. New York: Holt, Rinehart, and Winston, 1968.

Rothbart, M., Dalfen, S., & Barrett, R. Effects of teacher's expectancy on student-teacher interaction. Journal of Educational Psychology, 1971, 62, 49-54.

Rubovits, P. C., & Maehr, M. L. Pygmalion analyzed; Toward an explanation of the Rosenthal-Jacobson findings. Journal of Personality and Social Psychology, 1971, 19(2), 197-203.

Schrank, W. R. The labeling effects of ability grouping. The Journal of Educational Research, 1968, 62, 51-52.

Schrank, W. R. Further study of the labeling effect of ability grouping. The Journal of Educational Research, 1970, 63, 358-360.

Seaver, W. B. Effects of naturally induced teacher expectancies on the acadmeic performance of pupils in primary grades. Dissertation Abstracts International, 1971, 32(6A), 3426-7.

Wallen, N. E., & Travers, R. M. W. Analysis and investigation of teacher methods. In N. L. Gage (Ed.) Handbook of research on teaching. Chicago: Rand McNally & Co., 1963, 448-505.

Table 1

Correlations of Teacher Expectations with Behavior Ratings (N = 30)

	Correlations			Multiple
	Nature of the class	Expect. for self	Comparative expect.	R
Opportunity	-.06	.09	.05	.14
Clarity	-.09	-.09	-.14	.14
Enthusiasm	.15	.32	.32	.34

Table 2

Correlations of Teacher Expectations with Class Achievement Means (N = 30)

Variables	Correlations			Multiple
	Nature of Class	Expect. of Self	Comparative Expect.	R
Vocabulary	.04	.03	-.05	.10
Reading Comp.	.08	.04	.01	.09
Math. Concepts	.11	.16	.14	.17
Problem Solving	.27	.21	.17	.29

Table 3

Correlations of Instructional Behaviors with

Class Achievement Means (N = 30)

	Correlations			Multiple
	Opportunity	Clarity	Enthusiasm	R
Vocabulary	.08	-.02	.01	.14
Reading Comp.	.11	.01	.08	.15
Math. Concepts	.02	.04	.03	.04
Problem Solving	.24	.05	.14	.29

Table 4

Multiple Correlations of Teacher Expectations with Achievement within Each Behavior Group

	Teacher Behavior Groups	
	High Behavior	Low Behavior
Vocabulary	.48	.34
Reading Comprehension	.67	.36
Math Concepts	.60	.49
Problem Solving	.65	.16
	N = 14	16